

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-30. (Canceled)

31. (Currently Amended) Blasting method for cleaning surfaces, wherein liquid CO₂ is supplied via a feed line (32) into an expansion volume (34) having an enlarged cross section, is transformed into dry ~~show~~ snow by expansion, and is fed under pressure, together with a carrier gas to a blasting nozzle (14), wherein the volume V of the expansion volume and the internal cross-sectional area A of the feed line (32) fulfill the relation $V^{1/3}/A^{1/2} > 3$, and the mixture of carrier gas and dry snow is accelerated in the blasting nozzle (14) to at least approximately sonic speed, characterised in that the carrier gas is supplied under pressure through a blasting line (10) to the blasting nozzle (14), the liquid CO₂ is transformed into dry snow in the expansion volume (34) apart from the carrier gas in the blasting line (10) and the CO₂ dry snow is introduced from the expansion volume (34) into the blasting line (10) upstream of the blasting nozzle (14).

32. (Currently Amended) Blasting method according to claim 31, characterised in that the volume V ~~if of~~ of the expansion volume and the internal cross-sectional area A of the feed line (32) fulfill the relation $V^{1/3}/A^{1/2} > 10$.

33. (Previously Presented) Blasting method according to claim 31, characterised in that the flow rate proportion of CO₂ to carrier gas is at least 0.1 kg/m³, preferably at least 0.25 kg/m³.

34. (Previously Presented) Blasting method according to claim 31, characterised in that the proportion of the volume V of the expansion volume (34) to the flow rate of CO₂ amounts to at least 0.0002 m³ s/kg.

35. (Previously Presented) Blasting method according to claim 31, characterised in that the expansion volume (34) is thermally insulated from the environment.

36. (Previously Presented) Blasting method according to claim 35, characterised in that the portion of the feed line (32) adjacent to the expansion volume (34) is also thermally insulated from the environment.

37. (Previously Presented) Blasting method according to claim 31, characterised in that a deposition of solid dry ice at the walls of the expansion volume (34) and/or the blasting line (10) is caused by swirl edges (40) in the expansion volume or at the downstream end thereof.

38. (Currently Amended) Blasting method ~~according to claim 31~~ for cleaning surfaces, wherein liquid CO₂ is supplied via a feed line (32) into an expansion volume (34) having an enlarged cross section, is transformed into dry snow by expansion, and is fed under pressure, together with a carrier gas to a blasting nozzle (14), wherein the volume V of the expansion volume and the internal cross-sectional area A of the feed line (32) fulfill the relation $V^{1/3}/A^{1/2} > 3$, and the mixture of carrier gas and dry snow is accelerated in the blasting nozzle (14) to at least approximately sonic speed, wherein the carrier gas is supplied under pressure through a blasting line (10) to the blasting nozzle (14), and the liquid CO₂ is introduced from the expansion volume (34) into the blasting line (10) upstream of the blasting nozzle (14), characterised in that the blasting nozzle (14) has a constriction (18), a mixture of gaseous, liquid and solid CO₂ is produced in the expansion volume, and a part of the solid and liquid components evaporate in the blasting line or the blasting nozzle, and in that the position of the evaporation zone relative to the constriction (18) is determined by regulating the flow of carrier gas.

39. (Previously Presented) Method according to claim 31, characterised in that the flow of

carrier gas is throttled by means of a metering valve (26) upstream of the point of entry of the expansion volume (34) into the blasting line (10).

40. (Previously Presented) Method according to claim 39, characterised in that the carrier gas is supplied to the metering valve (26) with a pressure of at least 0.1 MPa, preferably about 1.0 to 2.0 MPa.

41. (Previously Presented) Method according to claim 31, characterised in that the CO₂ is supplied via the feed line (32) at environmental temperature and under a pressure necessary for maintaining the liquid state.

42. (Previously Presented) Method according to claim 31, characterised in that the CO₂ is supplied through the feed line (32) at a temperature of less than -15° C and at a pressure necessary for maintaining the liquid state.

43. (Previously Presented) Method according to claim 31, characterised in that the volume flow rate of the carrier gas is at least 0.75 m³/min.

44. (Currently Amended) Apparatus for cleaning surfaces, comprising: an expansion volume (34) having a volume V, a feed line (32) having an internal cross-sectional area A for supplying liquid CO₂, which opens into an the expansion volume (34), the volume V of the expansion volume and the internal cross-sectional area A of the feed line (32) [[.]] fulfilling the relation $V^{1/3}/A^{1/2} > 3$, and a convergent/divergent blasting nozzle for discharging a mixture of a carrier gas and CO₂ in the form of dry snow, characterised in that and a blasting line (10) is provided for supplying the carrier gas under pressure, wherein the expansion volume (34) opens into the blasting line (10) and is located between the feed line (32) and the blasting line (10) such that the liquid CO₂ is transformed into dry snow in the expansion volume (34) apart from the carrier gas

in the blasting line (10), and wherein the blasting nozzle (14) is connected to the downstream end of the blasting line (10).

45. (Previously Presented) Apparatus according to claim 44, characterised in that the blasting nozzle (14) is a Laval nozzle.

46. (Previously Presented) Apparatus according to claim 44, characterised in that the cross section of the expansion volume (34) increases from the feed line (32) towards the blasting line (10).

47. (Previously Presented) Apparatus according to claim 44, characterised in that at least one swirl edge (40) is formed in the expansion volume (34) and/or at the transition between the expansion volume (34) and the interior of the blasting line (10).

48. (Previously Presented) Apparatus according to claim 44, characterised in that the internal cross section of a downstream section (38) of the expansion volume (34) is approximately equal to the internal cross section of the blasting line (10).

49. (Previously Presented) Apparatus according to claim 44, characterised in that the expansion volume (34) enters into a straight section of the blasting line (10) from one side.

50. (Previously Presented) Apparatus according to claim 49, characterised in that the expansion volume (34) enters into the blasting line (10) at an angle from 5 to 90° in flow direction.

51. (Previously Presented) Apparatus according to claim 44, characterised in that the

expansion volume (34) has a length of at least 15 mm, preferably at least 49 mm.

52. (Previously Presented) Apparatus according to claim 44, characterised in that the internal diameter of the blasting nozzle (14) at its inlet opening is approximately equal to the internal diameter of the blasting line (10), and in that the internal diameter of a constriction (18) of the blasting nozzle is approximately 15 to 75 %, preferably about 35 to 45 % of the diameter at the inlet opening.

53. (Previously Presented) Apparatus according to claim 44, characterised in that the distance between the point of entry of the expansion volume (34) into the blasting line (10) and the constriction (18) of the blasting nozzle (14) is larger than the diameter (DL) of the blasting line (10).

54. (Previously Presented) Apparatus according to claim 44, characterised in that a metering valve (26) is arranged in the blasting line (10) upstream of the point of entry of the expansion volume (34).

55. (Previously Presented) Apparatus according to claim 44, characterised in that a metering valve (42) is arranged in the feed line (32) directly upstream of the expansion volume (34).

56. (Previously Presented) Apparatus according to claim 44, characterised in that the length of the expansion volume (34) amounts to at least 15 mm, preferably at least 30 mm.

57. (Currently Amended) Apparatus according to claim 44, characterised in that the blasting nozzle (14) is a flat nozzle, having a cylindrical section (14a), a transition piece (14b) and a flattened section (14c), the flattened section having an approximately rectangular internal cross section.